

CLAIM LISTING: The following claim listing supersedes all prior claim listings presented in this application:

1. (Original) A method for reducing the level of perchlorate load on perchlorate-loaded ion exchange resin comprising the steps of:
 - a. obtaining perchlorate-loaded ion exchange resin, and
 - b. directly contacting the perchlorate-loaded ion exchange resin with a perchlorate-destroying microorganism fluid product under conditions leading to conversion of perchlorate load on the resin to nonperchlorate reaction products and generation of treated ion exchange resin having reduced perchlorate load relative to the perchlorate-loaded ion exchange resin.
2. (Original) The method of claim 1 wherein the perchlorate-destroying microorganism fluid product is a fluid suspension comprising cultured perchlorate-destroying microorganisms.
3. (Original) The method of claim 1 wherein the perchlorate-destroying microorganism fluid product is a perchlorate-destroying microorganism culture supernatant liquid.
4. (Original) The method of claim 1 wherein the nonperchlorate reaction products comprise oxygen and at least one member of the group consisting of chloride, chlorite, hypochlorite and chlorate.
5. (Original) The method of claim 1 additionally comprising the step of
 - c. recovering the treated ion exchange resin.

6. (Original) The method of claim 5, wherein the method is a method for safely disposing of perchlorate-loaded ion exchange resin, said method additionally comprising the step of:

d. disposing the recovered treated resin.

7. (Original) The method of claim 5, wherein the method is a method for regenerating perchlorate-loaded ion exchange resin, said method additionally comprising the step of

e. recycling the recovered treated ion exchange resin to a water treatment zone.

8. (Original) The method of claim 1, 6 or 7 wherein the conditions in step b. are anaerobic or facultative conditions.

9. (Original) The method of claim 8 wherein the perchlorate-destroying microorganism is selected from the group consisting of:

a mixed culture found in municipal anaerobic sludge,

a mixed culture found in activated sludge,

Vibrio dechloroticans Cuznesove,

strain GR-1

Wohanella succinogenes

Ideonella dechloratoms, and

Acinebacter thermotoleranticus.

10. (Original) The method of claim 5 wherein the recovering of step c. comprises rinsing the treated ion exchange resin.

11. (Original) The method of claim 5 wherein the recovering of step c. comprises sterilizing the treated ion exchange resin.
12. (Original) The method of claim 1 wherein the conditions in step b. include the presence of added substrate for the perchlorate-destroying microorganism.
13. (Original) The method of claim 12 wherein the added substrate is selected from lower alcohol, sugar or waste-activated sludge.
14. (Original) A method for removing perchlorate contamination from a perchlorate-containing feed water comprising
 - a. contacting the perchlorate-containing feed water with an anion exchange resin having an affinity for perchlorate thereby removing perchlorate from the feed water and forming a reduced perchlorate content product water and perchlorate-loaded ion exchange resin,
 - b. separating the reduced perchlorate content product water from the perchlorate-loaded ion exchange resin,
 - c. directly contacting the perchlorate-loaded ion exchange resin with a perchlorate-destroying microorganism fluid product under conditions leading to conversion of perchlorate load on the resin to nonperchlorate reaction products and generation of treated ion exchange resin having reduced perchlorate load relative to the perchlorate-loaded ion exchange resin
15. (Original) The method of claim 14 wherein the perchlorate-destroying microorganism fluid product is a fluid suspension comprising cultured perchlorate-destroying microorganisms.
16. (Original) The method of claim 14 wherein the perchlorate-destroying microorganism fluid product is a perchlorate-destroying microorganism culture supernatant liquid.

17. (Original) The method of claim 14 wherein the nonperchlorate reaction products comprise oxygen and at least one member of the group consisting of chloride, chlorite and hypochlorite.
18. (Original) The method of claim 14 additionally comprising the step of
 - d. recovering the treated ion exchange resin.
19. (Original) The method of claim 18 additionally comprising the step of
 - e. disposing the recovered treated resin.
20. (Original) The method of claim 18 additionally comprising the step of
 - f. recycling the recovered treated ion exchange resin to step a. for contact with perchlorate-containing feed water.
21. (Original) The method of claim 20 wherein the recovering of step d. comprises rinsing the treated ion exchange resin.
22. (Original) The method of claim 20 wherein the recovering of step d. comprises sterilizing the treated ion exchange resin.
23. (Original) The method of claim 14 wherein the conditions in step c. include the presence of nutrient for the perchlorate-destroying microorganism.
24. (Original) The method of claim 23 wherein the nutrient is selected from lower alcohol, sugar and carbon sources.
25. (Original) A method for removing perchlorate contamination from a perchlorate-containing feed water containing perchlorate and at least one of nitrate and sulfate comprising:

- a. contacting the feed water with a first anion exchange resin having an affinity for perchlorate, nitrate and sulfate thereby removing perchlorate, nitrate and sulfate from the feed water and forming a reduced perchlorate, nitrate and sulfate content product water and perchlorate, nitrate and sulfate-loaded first ion exchange resin,
- b. separating the reduced perchlorate, nitrate and sulfate content product water from the perchlorate, nitrate and sulfate-loaded first ion exchange resin,
- c. contacting the perchlorate, nitrate and sulfate-loaded first ion exchange resin with brine, under conditions leading to the displacement of the perchlorate, nitrate and sulfate ions off of the resin into the brine to yield a perchlorate, nitrate and sulfate-loaded spent brine and introduction of chloride ions onto the first ion exchange resin to yield a regenerated first resin,
- d. separating the perchlorate, nitrate and sulfate-contaminated spent brine from the regenerated first resin,
- e. contacting the separated spent brine with a second anion exchange resin having an affinity for perchlorate thereby removing perchlorate from the spent bring and forming a reduced perchlorate content treated spent brine and a perchlorate-loaded second ion exchange resin,
- f. directly contacting the perchlorate-loaded second ion exchange resin with a perchlorate-destroying microorganism fluid product under conditions leading to conversion of perchlorate load on the resin to nonperchlorate reaction products and generation of treated ion exchange resin having reduced perchlorate load relative to the perchlorate-loaded ion exchange resin.

26. (Original) The method of claim 25 wherein the perchlorate-destroying microorganism fluid product is a fluid suspension comprising cultured perchlorate-destroying microorganisms.

27. (Original) The method of claim 25 wherein the perchlorate-destroying microorganism fluid product is a perchlorate-destroying microorganism culture supernatant liquid.

28. (Original) The method of claim 25 wherein the nonperchlorate reaction products comprise oxygen and at least one member of the group consisting of chloride, chlorite and hypochlorite.

29. (Original) The method of claim 25 additionally comprising the step of

g. discarding the treated spent brine.

30. (Original) The method of claim 25 additionally comprising the step of

h. recycling the recovered treated first ion exchange resin to step a. for contact with perchlorate-containing feed water.

Claims 31-35 (Cancelled)